Information Technology (IT) Strategic Plan 2003-2008

Office of the Chief Information Officer

U.S. Department of Commerce
National Oceanic and Atmospheric Administration

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Website address: WWW.OCIO.NOAA.GOV

Preface

This document, NOAA's "Information Technology Strategic Plan", is only one of the many components of NOAA's information technology (IT) planning process. It should be read with the understanding that other plans and documents contain more detailed and system specific information.

Other sources of information on NOAA's IT plans and performance include:

- Information Technology Operational Plan
- Major System Business Cases, Exhibit 300s (documented in the IT Investment Portfolio System (I-TIPS))
- IT Portfolio, Exhibit 53 (documented in the IT Investment Portfolio System (I-TIPS))
- Federal Information Security Act (FISMA) reports
- Government Paperwork Elimination Act (GPEA) reports
- Information Collection Budget
- Capability Maturity Model (CMM) Annual Report on Planning and Architecture

This document establishes the linkages between NOAA IT plans and the agency's Strategic Plan and its strategic mission goals. It also documents the overriding issues that establish the context in which NOAA is operating. These issues provide the focus for the development of a high level action plan.

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New Priorities for the 21st Century: One NOAA

NOAA's CORE VALUES:
People, Integrity, Excellence, Teamwork, Ingenuity Science, Service and Stewardship

The 21st century poses complex challenges for the National Oceanic and Atmospheric Administration (NOAA). Given intensifying national needs related to the environment, the economy, and public safety, every aspect of NOAA's mission – ranging from managing coastal and marine resources to predicting changes in the earth's environment – faces a new urgency. As the new century unfolds, new priorities for NOAA action are emerging in the areas of climate change, water supply, ecosystem management, and homeland security. NOAA's Strategic Plan has been developed as a response to these challenges, setting the framework to build NOAA's capacity to address new priorities and realize its Vision.

NOAA VISION

To move NOAA into the 21st Century scientifically and operationally, in the same interrelated manner as the environment that we observe and forecast, while recognizing the link between our global economy and our planet's ecology.

The Office of the Chief Information Officer (OCIO) and High Performance. Computing and Communications has developed this plan to support the mission requirements and goals as laid out in the NOAA Strategic plan. This plan should be viewed as a supporting the achievement of NOAA's vision and mission for the year 2008. OCIO activities are described in two parts of this plan."Agenda for Action," details OCIO activities that are NOAA- or enterprise-wide and support all of the NOAA goals. These activities are cross-cutting in nature and will assure that NOAA's information technology infrastructure will support the NOAA vision. The second part, "Strategic Investments," is outlined in appendix A. These descriptions include IT projects being performed in each of the NOAA Line Offices which the OCIO, through the CIO Council, provides oversight.

NOAA MISSION

To understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet the Nation's economic, social, and environmental needs.

All IT projects through 2008 are focused on supporting these four overarching Mission Goals of the NOAA Strategic Plan:

1. **Protect, Restore, and Manage Use of Coastal and Ocean Resources through Ecosystem Management Approaches**
2. **Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond**
3. **Serve Society's Needs for Weather and Water Information**
4. **Support the Nation's Commerce with Information for Safe and Efficient Transportation**

In an effort to build specific core strengths, NOAA has selected six areas, adopted as six cross-cutting priorities, that it recognizes as essential areas of growth for the future.

CROSS-CUTTING PRIORITIES FOR NOAA IN THE 21st CENTURY

- **Integrated Global Environmental Observation and Data System**
- **Environmental Literacy, Outreach, and Education**
- **Sound, Reliable State-of-the-Art Research**
- **International Cooperation and Collaboration**
- **Homeland Security**
- **Internal Operations and Infrastructure to Support Organizational Excellence**

These Cross-Cutting Priorities are also core capabilities of NOAA. The OCIO vision and mission are aligned to assure the success of achieving these goals and priorities.

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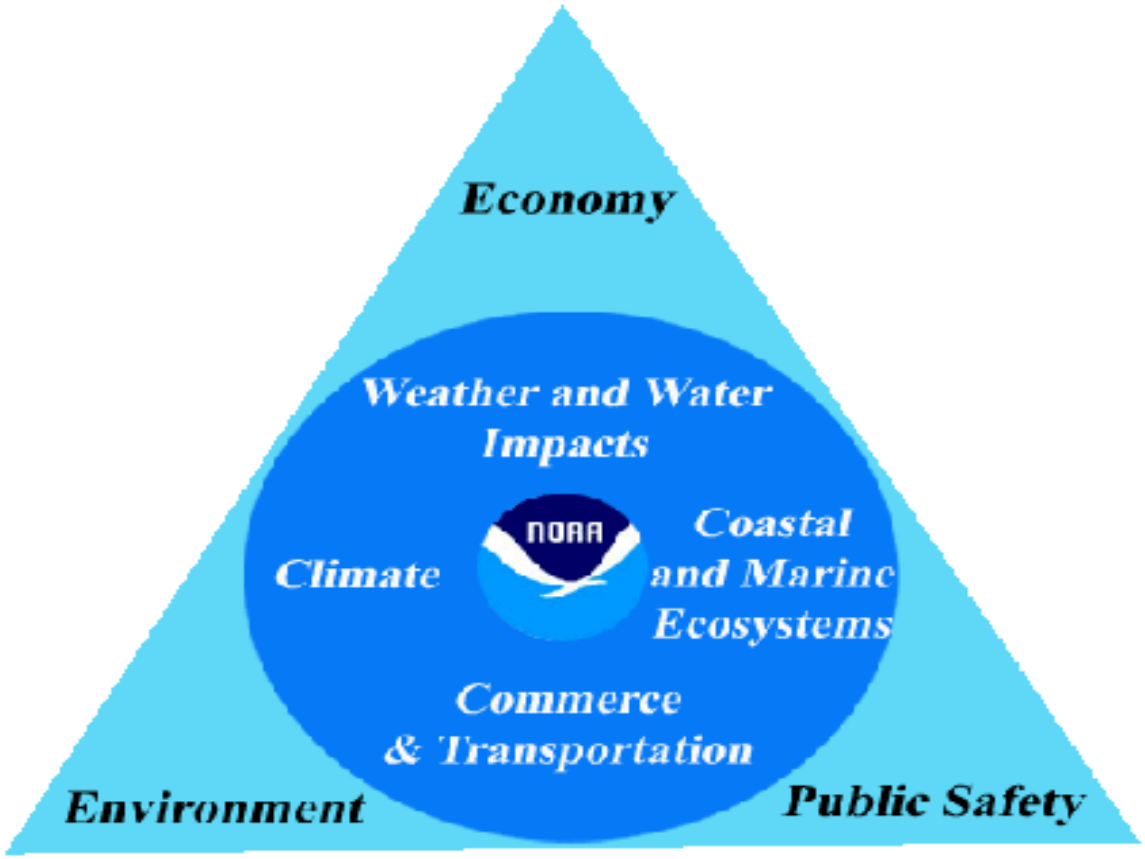


Message from the NOAA CIO

As the NOAA CIO, I believe it is of paramount importance that information technology in NOAA be poised to support the changing mission requirements in the decade ahead. The vision of the NOAA Strategic plan will bring challenges in information technology planning, security, and network operations for the next five years. Investments not only in hardware and software but also in human capital will be required. Developing state of the art training, implementing robust fault tolerant networks, high performance computing, IT architecture, and knowledge management tools will be key to NOAA's future. NOAA must also strive to eliminate duplication of IT functions and leverage applicable E-Gov initiatives.

Carl Staton
NOAA, CIO

OCIO Vision

To deliver state of the art information technology solutions to wherever they are needed to satisfy NOAA's mission requirements into the 21st century.

OCIO Mission

The Office of the CIO is committed to providing the best in information technology planning, management, and security. This includes achieving the goals and priorities of the NOAA Strategic plan, implementing new government wide mandates, advanced computing, networking, and efficiencies.

The Importance of Information Technology in NOAA

NOAA is a science-based service agency. In support of its missions it collects, processes, evaluates, disseminates, and archives vast quantities of information and information products. The effective use of information technology (IT) is a critical success factor in NOAA's ability to accomplish its mission. Because of this, the use of IT is integrated into virtually all aspects of NOAA's cross cut priorities, and NOAA's Strategic Plan recognizes the critical role of environmental data and information services.

Information technology allows NOAA to increase the amount and quality of environmental data collected. IT is an integral part of environmental data-collection systems, including radar, sonar, and satellite systems. Once collected, the data are evaluated and processed to create useful products. For instance, NOAA uses advanced computing technology to make weather and climate forecasts.

IT resources are essential tools in the production of information products such as nautical and aeronautical charts and management tools such as quotas for fish species. IT also allows NOAA to disseminate products such as these to the public in a timely manner. In the case of a weather warning, "timely" means immediately, through systems such as the NOAA Weather Radio system or through links to emergency management offices. Other products are disseminated in "real time" to allow the preparation of forecasts. NOAA also serves the research community's need for reliable and responsive access to NOAA data covering extended periods of time.

NOAA uses IT to create and preserve the Nation's long-term environmental record. The Nation's ability to make informed decisions affecting the environment and the economy hinge on the integrity and completeness of environmental datasets. As NOAA collects and processes a larger volume of environmental data, the systems that archive and preserve the data for posterity must keep pace.

Strategic Context: Opportunities and Challenges

Information technology in NOAA is evolving in a rapidly changing environment.

Recognizing that "Customers and partners have advocated a seamless set of observed and forecast products cutting across the lines of weather, water, and climate," the NOAA Administrator has made his vision clear: Observing platforms in the future will serve multiple mission requirements. Systems that have evolved over the years in stovepipe environments are being transformed to work together to achieve this new vision.

Networking and computing is being pressed to the maximum as a "digital public" demands higher quality and more timely products from NOAA systems. NOAA has responded with increased visibility on the internet which has in turn increased public awareness of information that can enhance and protect quality of life. This NOAA Strategic plan recognizes the need for a NOAA Enterprise Architecture to meet this evolving challenge.

The technological convergence of video and standard communications, the increasing need for greater mobility and enhanced security, and the public desire for new information appliances all present challenges for NOAA IT planning. These challenges are addressed in several broad strategic investment areas:

Information Technology Security

The events of September 11, 2001 have permanently amplified the strategic importance of having a proactive, vigilant, and fully resourced security program. Information systems security is the foundation upon which NOAA activities in the support of Homeland Security rely. These activities range from routine and incident-specific weather prediction to classified activities.

The NOAA IT Security Program encompasses:

- IT Security Infrastructure
- Training Education and Awareness
- Computer Incident Response Team
- Intrusion Detection.

The strategic objectives of NOAA's security program are:

- provide reasonable, acceptable assurance that NOAA systems are performing as specified
- protect information
- maintain data and software integrity
- minimize impact of unplanned disruptions.

These objectives are aligned with the objectives of the “National Strategy to Secure Cyberspace":

- prevent cyber attacks against America’s critical infrastructures
- reduce national vulnerability to cyber attacks
- minimize damage and recovery time from cyber attacks that do occur.

In response to these immediate requirements NOAA completed an assessment of all of NOAA assets. This assessment was used to identify gaps requiring immediate attention and strategic investments in the future.

Networking

To satisfy the NOAA vision for the future, networking must move from an individual program-supported function to a NOAA utility supporting multiple mission requirements. This will require an organizational shift away from multiple decentralized networks to a NOAA Network service capable of flexibly providing information to all of NOAA

Both the Messaging Operations Center (MOC) and the Network Operations Center (NOC) have developed new architectures that will move NOAA to a higher-speed more robust design capable of supporting new functionality and throughput volume and demand several orders of magnitude greater than previous designs could support.

OCIO, working with the NOAA wide Network Advisory Technical Team (NATT), has developed a baseline of NOAA network assets. Building on that Baseline, OCIO will develop an analysis of technical reference model that will lead to a Target Network Architecture. The following key components are included in the analysis:

. Wide Area Networks: Highspeed communications among geographically remote locations.
- Gateway Routers: access points to the Internet and other agencies
- Core and Distribution Switches: interconnection of buildings and networks
- Firewalls: prevention of hacking
- Key Directory Servers: authentication
- E Mail Gateways or Relays: enhanced communication and reliability

Developing and Sustaining the NOAA Workforce

NOAA personnel are its greatest asset. To maintain a highly trained, motivated, and resource-oriented staff of technology professionals will be NOAA's greatest challenge. NOAA is investing in the access and security improvements required to support the telework program. OCIO is evaluating handheld and wireless technology to support mobile workers, investigating the use of Internet-based video teleconferencing to support a dispersed workforce, and deploying a program for providing Web-based training to all NOAA employees.

High Performance Computing

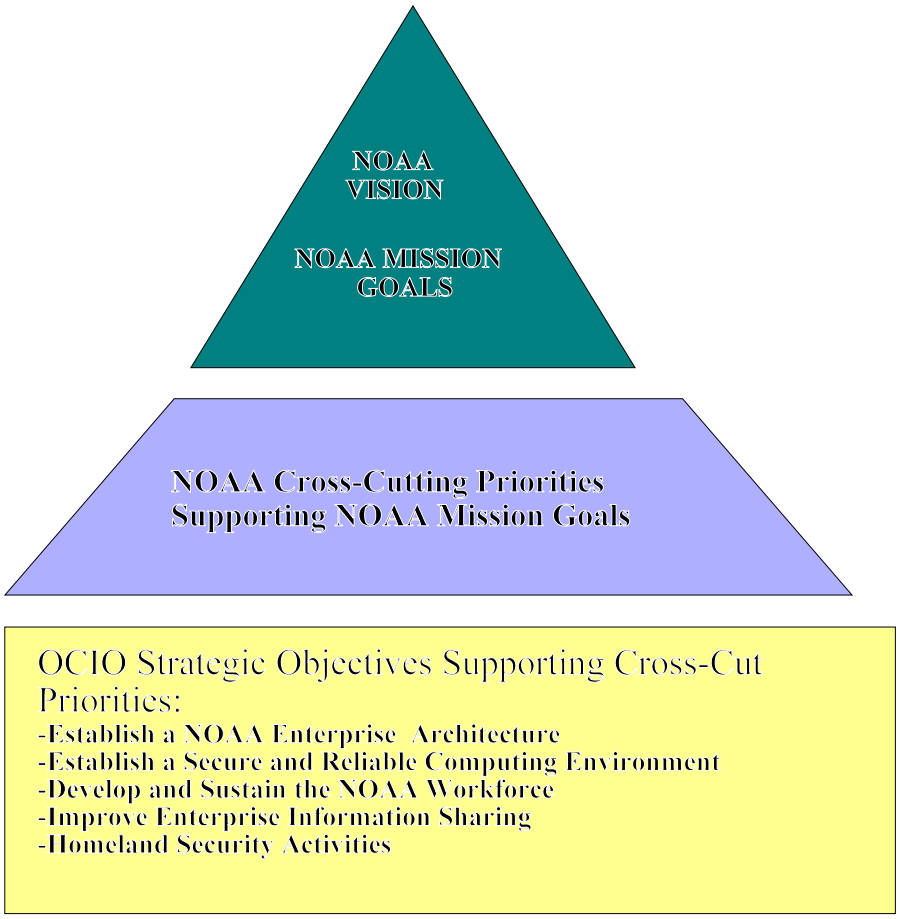
Advances in information technology require faster and more capable computing across a broad spectrum of platforms ranging from desktops to the very high performance computers required for modeling and forecasting. High Performance Computing (HPC) will be used to meet NOAA's requirement for higher resolution models and for improved representation of the physics, chemistry, and biology of environmental systems, and to help manage and process the rapidly increasing amounts of data available and necessary to run models. NOAA has recognized the need to migrate from large proprietary mainframes to more modular and scalable processing systems and software. The OCIO is developing a strategy to examine NOAA HPC requirements and implement NOAA-wide solutions.

Homeland Security

NOAA programs and the inherent capabilities which traditionally support protection of life and property, extend to numerous problems and concerns related to homeland security.
To capitalize on existing communications expertise, capabilities, and leadership, the NOAA Homeland Security Activities (HSA) office has been established in the OCIO. HSA is responsible for:

- coordinating all NOAA plans, programs, and policies regarding homeland security;
- ensuring continuity of operations and evacuation planning;
- ensuring continued delivery of NOAA services;
- working with NOAA Finance and Administration to guarantee the safety and security of NOAA's people and facilities.

OCIO Support of NOAA Mission Goals 2003-2008



Agenda for Action:
Strategic Objectives Supporting NOAA Mission Goals

As stated in the NOAA strategic plan, "NOAA will maintain and improve its technology infrastructure in order to enhance NOAA's scientific productivity through seamless sets of observed and forecast products, advanced high bandwidth networks, and support for increasingly flexible sources for the delivery of information."

The CIO has five strategies to advance its agenda of supporting all four of NOAA's Strategic Plan Goals. To achieve success, the CIO will pursue each strategy in a manner that reinforces the others. The four strategies are mutually supporting and so cannot be achieved individually. An integrated approach is both necessary and efficient. These strategies implement the OCIO responsibilities for "Cross-Cutting Priorities" as described in NOAA's Strategic Plan sections. The challenges and NOAA's technical response to address these priorities are shown in the chart on the following page.

NOAA OCIO Strategies

1.0 Establish a NOAA Enterprise Architecture

"Creation of a Single Flexible and Networked Information Technology Environment."
Allow NOAA information technology resources to be readily available across the enterprise to support multiple mission requirements. Priority will be given to exploiting technology to meet all customer needs including global and local interdisciplinary scientific programs and observing stations. The initial focus will be on networking.

Strategies	Performance Measure
1.0 Develop NOAA Enterprise Architecture Model	Percentage of NOAA IT Processes fully represented in NOAA Architecture Model
1.1 Convergence of NOAA networks into a single utility based on Architecture Complete Baseline - December 2003 Articulate Target Architecture - Mar. 2004 Migration Strategy - May 2004	Percentage of networks operating on a central utility Percentage of peak network capacity used monthly.
1.2 Migration to modular and scalable computing environment (e.g. commodity based cluster computers, cluster architecture, network data storage).	Percentage of systems migrated to environment.
1.3 Move NOAA's key sites onto the Next Generation Internet	Number of NOAA centers connected to NGI.

Benefits	Reduced Cost, Scalable, Quality of Service (including: availability, security, and responsiveness). Improved customer service through increased access to NOAA information and cost savings.

2.0 Establish a Secure and Reliable Computing Environment

This strategy provides support for Information Security and Critical Infrastructure Protection within NOAA. The convergence of technologies in personal computing, video, and communications requires NOAA to develop a secure environment in order to meet its mission requirements. NOAA's IT infrastructure must not only be secure through proactive vigilance but also be able to withstand attack.

Strategies	Performance Measures
2.0 Operation of NOAA Computer Incident Response Team (N-CIRT)	Number of successful intrusions Number of man hours lost per intrusion
2.1 Elimination of Single Points of Failure	Number of added redundant paths to existing network nodes
2.2 Implementation of NOAA wide Information Technology Security Architecture	Number of systems incorporated into the secure operating environment
2.3 Establish single source of authentication of NOAA employees	TBD by deployment of PKI technology
2.4 Provide Security Awareness Training for NOAA personnel	Percentage of NOAA employees completing online awareness training
2.5 Establishment of security accreditation for mission critical systems	Percentage of NOAA IT systems accredited.

Benefits	Policy compliance, decreased risk, improved confidentiality, integrity, and availability in NOAA systems.

3.0 Develop and Sustain the NOAA Workforce

Mission delivery is dependent on skilled and motivated employees with the necessary knowledge to fully exploit technology.

Strategies	Performance Measures
3.1 Increase online training opportunities including E*Learning, Web based security training, systems administrator training NOAA wide	Percentage of NOAA employees participating in online training.
3.2 Recruitment and Retention strategies for Information Technology Workers	Percentage reduction in early staff turnover
3.3 Client accessibility and accommodation of NOAA systems	Percentage of systems with full compliance to regulatory requirements

Benefits	Reduced cost, improved productivity, employee retention, compliance with regulations

4.0 Improve Enterprise Information Sharing

There is an increasing need for decision makers with NOAA to have access to a variety of information. This information is both scientific and administrative. Barriers to getting this information will be removed and quality of the information improved.

Strategies	Performance Measures
4.1 NOAA Administrative systems migrated to a single supportable Technical Reference Model (TRM) -Completion of NOAA TRM TBD -Completion of DOC Administrative Architecture TBD	Percentage of systems adhering to the TRM
4.2 Implementation of Common Look& Feel for NOAA web sites - Implement Look&Feel Policy 6/2004 - Implement Privacy Policy 12/2003	Percentage of Web sites adhering to policies
4.3 Establish a single transparent and supportable office automation environment. This will require standardization, implementation of help desk support, and regular replacement of aging technology	Percentage of desktops standardized and supported by Help Desks Percentage of desktop PCs less than three years old.
4.4 Quality and reliability of information maintained. - Implement web content management policy Ongoing - Implement 515 policy Ongoing	Reduced number and time required for responding to 515 complaints Percentage of systems covered by content management plans
4.5 Through the HPCC program accelerate NOAA's ability to utilize advanced computing	Percentage of IT R&D transition to daily use. Number of major models adapted to highly parallel systems.

Benefits	Reduced cost, scalable resources, increased quality of service and improved customer service.

5.0 Homeland Security Activities

Coordinates NOAA's preparations for and response to terrorist-related incidents or other major disruptive events with the NOAA facilities staff. The goal is to maintain continuity of NOAA services, increase safety for NOAA personnel, and make NOAA facilities more secure.

Strategies	Performance Measures
5.1 Organizational Assessment & Readiness - Promote and monitor the status throughout NOAA of: Continuity of Operations Plans; Occupant Emergency Plans; and the NOAA Incident Response Plan. - Working with Facilities and Security, develop and maintain a NOAA infrastructure that protects lives and property and ensures continuity of service - Monitor training and conduct facility emergency drills	- Percentage of sites covered by Continuity of Operations Plans; - Percentage of NOAA sites with current plans posted on the HSA website (emergency.noaa.gov) - Number of drills conducted each year - Number of visitors to HSA website
5.2 NOAA Incident Coordination Center (NICC) Establish Center FY04	Percentage of external requests responded to within 24 hours.
5.3 Support National Homeland Security - provide NOAA point of contact for other federal, state, and local agencies	Number of interagency drills NOAA participates in each year

Benefits	Advanced state of emergency readiness within NOAA; more reliable delivery of NOAA services in the event of an emergency.

Cross walk of the OCIO strategies to the NOAA Strategic Plan Cross Cut Priorities:

NOAA Cross Cut Priority	OCIO Supporting Strategies	Outcome Goal
Integration of Global Environmental Observation and Data Management System*	#1 Establish Enterprise Architecture #2 Establish a Secure Reliable Environment	-Establish a capability to accommodate increases in data volume -Create directories and data structures that identify, access and in integrate multi-disciplinary data
Environmental Literacy, Outreach, and Education	#1 Establish Enterprise Architecture #3 Develop and Sustain the NOAA Workforce	Provide adequate capacity to broadcast multimedia educational materials
Sound, Reliable State-of-the-Art Research	#1 Establish Enterprise Architecture #2 Establish a Secure Reliable Computing Environment #4 Improve Information Sharing	Assure access to next generation research networks and high performance computers across the enterprise
International Cooperation and Collaboration	#1 Establish Enterprise Architecture	Establishing open standards based communications capabilities
Homeland Security	#2 Establish a Secure Reliable Computing Environment	Provide secure communications and redundant data systems.
Organizational Excellence: Facilities, Infrastructure, Security, Human Capital and Administrative Services	#1 Establish Enterprise Architecture #3 Develop and Sustain the NOAA workforce #4 Improve Information Sharing	-Institutionalize regular technology refreshment -Establish an ubiquitous, secure, business quality remote access for teleworker -Develop an internal network to support high speed access to interactive administrative applications at all NOAA locations

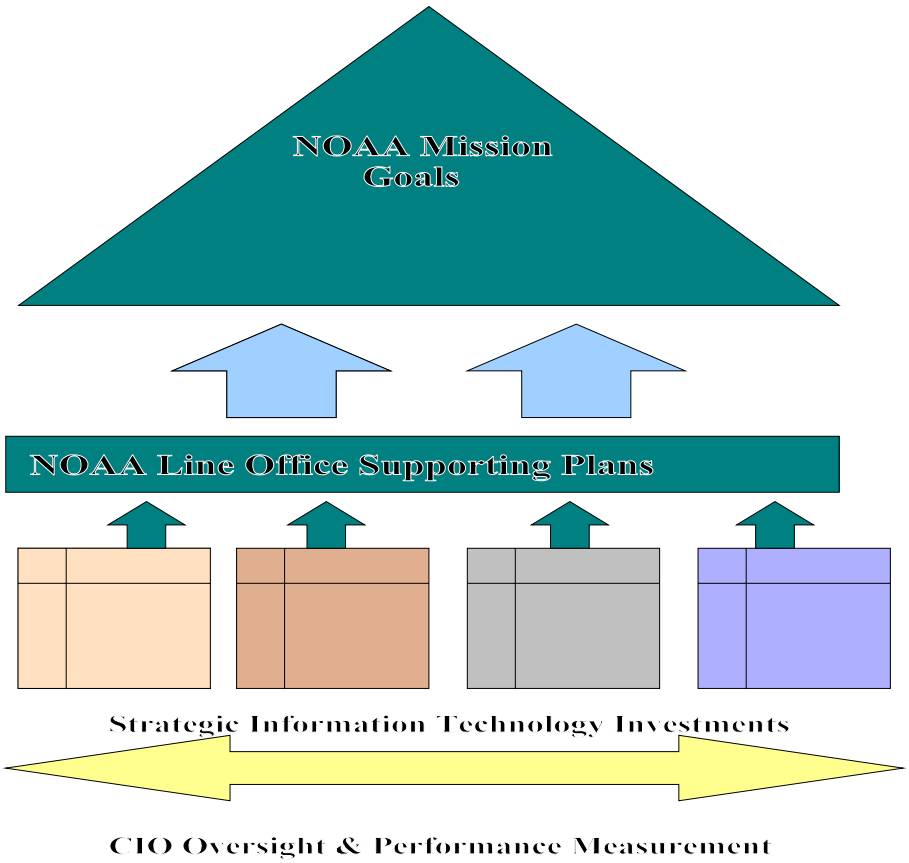
* NESDIS is identified as the lead organization for this priority. More information maybe obtained from the NESDIS strategic plan.

APPENDIX A

Strategic Information Technology Investments by NOAA Strategic Planning Goals

The OCIO provides ***oversight*** of the NOAA IT Capital Planning and Investment Process. Led by the CIO, the NOAA CIO Council reviews proposed and existing IT systems to consider their overall value to the organization, the return on the investment, and whether there are effective risk management plans. Recommendations are made for the budgeting process and for the management of the systems.

The following section describes the types of IT system investments supporting the goals of the NOAA's Strategic Plan. It focuses on major systems, but many smaller investments are also critical for maintaining the infrastructure supporting these goals. Words in italics are links to the strategies outlined in the NOAA Strategic Plan. *(Detailed descriptions of each individual project, budget, and milestones are included in the NOAA IT Plan available from the NOAA Office of the CIO.*)



MISSION GOAL 1. PROTECT, RESTORE AND MANAGE THE USE OF COASTAL AND OCEAN RESOURCES THROUGH ECOSYSTEM MANAGEMENT APPROACHES

Goal description: Coastal areas are among the most developed in the nation, with over half of the Nation's population and housing within less than one-fifth of the land area in the contiguous U.S. Further, coastal counties are growing three times faster than counties elsewhere, adding more than 3,600 people per day. Coastal and marine waters support over 28 million jobs, generate over $54 billion goods and services, and provide a tourism destination for 90 million Americans each year. The value added to the national economy by the commercial fishing industry is over $28 billion annually and over 17 million Americans engage in marine recreational fishing each year. It is within this context that NOAA works to achieve a balance between use and protection of these resources to ensure their existence for future generations and optimal contribution to the Nation's economy.

IT System Investments:
IT is essential to ***assess and predict*** the status of fisheries, protected species, and other resources. The fisheries management process requires access to data on the status of fisheries, catch and effort information on fishing activities, and so on. Protected species information is also vital for knowing the status of the species. Resources and areas cannot be mapped or inventoried without effective IT. In addition to upgrades to and reviews of current IT capabilities supporting this goal, a number of activities are underway or proposed to improve IT: deployment of a National Marine Fisheries Service (NMFS) Intranet with access for remote locations, Information Assurance Accreditation of IT Systems, e-training, improved security, and a Marine Mammal Health and Stranding Response Program database with uniform data collection and management.

In actions to ***engage, advise, and inform*** the public, there are plans to improve our Web presence, and to encourage public input to rules and other actions through a Public Consultation Tracking System and electronic rulemaking/records administration.

To help NOAA ***manage*** these resources two IT activities are planned. Since many resource users are required to obtain permits, a fisheries one-stop electronic permit application system is planned. To help obtain grantee help in an efficient way, and manage this process, work is underway on an Electronic Grants system and a Web-based Fisheries Grant Management System.

MISSION GOAL 2. Understand Climate Variability and Change in order to Enchance Society's Ability to Respond.

Goal description: It is essential for NOAA to provide observations, forecasts, and assessments of climate, water, and ecosystems, as well as to participate in analyzing decisions to ensure the best choices. This information will support decisions regarding community planning, public policy, business management, homeland security, and natural resource planning. To enable society to better respond to changing climate conditions, NOAA, working with national and international partners, will employ an end to end system comprised of: integrated observations of key atmospheric, oceanic and terrestrial variables; a scientific understanding of the atmosphere, ocean and land surface processes that influence climate; and service delivery methods that continuously assess and respond to user needs with the most reliable information possible.

IT System Investments: In order to ***assess and predict*** climate variability NOAA needs the support from a number of IT systems and related activities. A critical one involves high-performance computing resources, such as at OAR's Geophysical Fluid Dynamics Laboratory. Given the complexity of assessing and predicting climate, there is an almost unlimited need for processing capacity and data storage. Higher capacity is essential for more sophisticated models and model physics, more comprehensive modeling experiments, and higher-resolution simulations. NOAA must regularly review how to best meet the organization's needs in this area, and effectively make the case for improvements during the budget process.

MISSION GOAL 3. SERVE SOCIETY'S NEEDS FOR WEATHER AND WATER INFORMATION

Goal description: Nearly one-quarter of the US economy (about $2.7 trillion) is weather sensitive. America's 105 million US households consult the day's weather forecast at least once a day and the value of daily forecasts to the public is estimated to be nearly $12 billion annually. Hurricanes, tornadoes, and other severe storm events cause $11 billion in damages annually. Seasonal weather derivatives financial contracts are over $4 billion annually. Degraded air quality in the U.S. causes mortality, illness, and crop loss valued over $100 billion annually.

IT System Investments: NOAA integrates weather, water, and climate observations to issue forecasts and warnings that protect lives and property, and enhance the U.S. economy. The Nation's growing population and coastal development trends make citizens increasingly vulnerable to the effects of natural hazards. At the same time, society increasingly recognizes the impacts of weather and water on business, and has become more sophisticated at using this information to improve profits, and all these elements are contributing to the expansion of NOAA's role in weather and water assessment and prediction. NOAA, committed to excellence

in customer service, currently depends on many partners in the private sector, academia and government to meet growing demands for critical environmental information. But NOAA must expand forecast and warning services to support evolving national needs, including space weather and air quality forecasts, bridging weather and climate time-scales, and management support for environmental resources – fresh water, coastal ecosystems, and air quality – throughout the nation.

This mission goal involves the largest IT investment made by NOAA.

- The need to ***monitor and observe*** weather and water is supported by the Next Generation Weather Radar (NEXRAD) System and satellite ground systems (the IT portion of satellite systems). To access information that has been obtained, data center capabilities need to be improved to handle the increasing volumes of data and to deliver information quickly to users. Major systems or projects in this area include the Comprehensive Large Array-data Stewardship System (CLASS) and the Satellite Active Archive.

- To ***understand and describe*** weather and water NOAA needs better models and the ability to run such models. This is supported by systems like the Weather and Climate Supercomputing Central Computer System at National Centers for Environmental Prediction and the Forecast Systems Laboratory high performance computers.

- To ***access and predict*** weather and water NOAA needs systems such as the Advanced Weather Interactive Processing System (AWIPS) and, again, the Weather and Climate Supercomputing Central Computer System

- To ***advise and inform*** the public in this area, NOAA uses systems like the NWS Telecommunications Gateway. Improved electronic delivery of information is obviously reliant on IT decisions.

MISSION GOAL 4. SUPPORT THE NATION'S COMMERCE WITH INFORMATION FOR SAFE AND EFFICIENT TRANSPORTATION

Goal description: Our Nation's Marine Transportation System (MTS) ships over 95 percent of the tonnage and more than 20 percent by value of our foreign trade through America's ports. Waterborne cargo alone contributes more than $740 billion to the U.S. gross domestic product and creates employment for over 13 million citizens. Every year 134 million passenger trips are ferried to work and other destinations on U.S. waterways, along with 5 million cruise ship passengers. Better aviation weather information could significantly reduce the $4 billion that is lost through economic inefficiencies as a result of weather-related air traffic delays.

The MTS also delivers 48 percent of the oil needed to meet U.S. energy demands. As U.S. dependence on the MTS grows over the next 20 years with the projected doubling of the volume of maritime trade, better navigation and weather information will be critical to protect lives, cargo, and the environment. Reducing the risk of marine accidents and oil spills, better search and rescue capabilities, and other efficiencies that can be derived from improved navigation and coastal and ocean information and services could be worth over $300 million annually around the Nation's coasts.

NOAA's information products and services are essential to the safe and efficient transport of goods and people at sea, in the air, and on land. Safe and efficient transportation systems are crucial economic lifelines for the Nation. For the MTS, NOAA is committed to improve the accuracy of its marine forecasts, provide advanced electronic navigational charts and real-time oceanographic information, and maintain a precise positioning network that mariners need to navigate with confidence. NOAA will work with port and coastal communities to ensure that port operations and development proceed efficiently and in an environmentally sound manner. For the aviation community, NOAA will work with the Federal Aviation Administration and the private sector to reduce the impacts of weather on aviation without compromising safety.

IT System Investments: NOAA's IT investments supporting this mission goal may be smaller than for the previous goal, but are no less critical for attaining it. Safe and efficient transportation depends upon weather and water conditions, so many of the systems described for Mission Goal 3 also impact the transportation area. Other key systems are identified below.

- To ***monitor and observe and understand and describe***, NOAA needs systems such as the National Water Level Observation Network, which provides the foundation for the tidal and Great Lakes vertical water-datum control for the nation, and the Geodetic Support System, which is essential for accurate positioning and application of the Global Positioning System. The Nautical Charting and Surveying System helps acquire and use survey data from navigationally-significant U.S. waters. NOAA is also the lead U.S. agency for the Search and Rescue Satellite-Aided Tracking (SARSAT) system, which uses satellites to monitor emergency beacons and provides distress alert and location information for search and rescue authorities.
- To ***assess and predict***, NOAA has installed Physical Oceanographic Real-Time Systems (PORTS®) in a number of locations. A PORTS provides the real-time environmental information for a given U.S. port needed to establish navigation parameters for safe travel within the port; to determine appropriate cargo transport load information; and to define both present and future oceanographic conditions at the given location.

- To ***advise and inform*** the public NOAA is using the Nautical Charting and Surveying System to increase the percentage of charts available in the Electronic Navigation Chart format. Also, the PORTS mentioned above delivers its data directly to users.

NOAA'S CROSS-CUTTING PRIORITIES

IT System Investments: NOAA is increasing its efforts to escape from stove-pipe approaches to program and IT needs. In addition to the cross cut strategies already outlined in this plan. NOAA has identified additional areas for strategic planning. Areas of this mission goal where IT is especially relevant are:

- For "Integrated Global Environmental Observation and Data Management System", although this system is still in the planning stage, any comprehensive data management system will clearly depend on IT for the storage of and access to this enormous volume of data.

- For Homeland Security, NOAA is proposing to automate the collection and dissemination of civil-emergency messages over the NOAA Weather Radio All Hazards Weather Network. The increased use of vessel monitoring systems requires the IT capacity to deal with the position signals obtained.

- As previously described in this plan the OCIO is committed to supporting the cross-cutting priority "Attaining Organizational Excellence in the areas of Facilities, Infrastructure, Security, Human Capital, and Administrative Services."

APPENDIX B

CIO Strategic Planning Framework

Information Technology Planning in NOAA is performed in accordance with the Office of Management and Budget Circular A-130 and the Clinger-Cohen Act of 1996. The CIO provides oversight of NOAA's IT capital planning and investment control process (CPIC) to promote economic efficiencies by consolidating redundant IT systems and establishing unified and easily managed IT infrastructure. The CPIC process helps to maximize the return on NOAA's IT investments.

Capital Planning and Investment Control

Internally the CIO has established an IT Review Board and a NOAA Chief Information Officer (CIO) Council. The IT Review Board evaluates all NOAA IT investments. The NOAA CIO Council shares effective IT management practices and information and establishes NOAA-wide IT policies, procedures and practices. It also oversees NOAA-wide IT projects and operations which are funded through organizational cost distribution, and other projects as tasked by the NOAA CIO or NOAA management.

Managers responsible for developing new systems must have the benefit of lessons learned from past experiences. The use of "best practices" for project management and software engineering techniques for system design and implementation is emphasized.

The performance of operational IT systems are measured and evaluated. The goal must be continuous improvement, not the status quo.

President's Management Agenda

> ***"Government likes to begin things – to declare grand new programs and causes. But good beginnings are not the measure of success. What matters in the end is completion. Performance. In my Administration, that will be the standard from the farthest regional office of government to the highest office in the land."*** **– George W. Bush**

In August 2001, The President's Management Council released the President's Management Agenda (PMA). The PMA identified five administration priorities for improving government performance:

- Strategic management of human capital
- Competitive sourcing
- Improved financial performance
- Expanded electronic government
- Budget and performance integration
-

To assure the success of the PMA in NOAA, the OCIO has established a business process that embraces this agenda and incorporates accountability and performance measurement.

NOAA E-Government Initiatives

In July 2001, The Office of Management and Budget (OMB) established an E-Government (E-GOV) task force to identify priority actions that achieve improvements in government, and begin government's transformation to focus on citizen needs.

In FY04, NOAA will establish a base program responsible for managing NOAA's participation with other federal agencies in implementing federal-wide E-GOV initiatives. This program will support the development and implementation of E-Government activities that affect NOAA's mission and business processes, including E-Disaster (Disaster Assistance & Crisis Response), Recreation One-Stop, E-Grants, and Geospatial One-Stop initiatives.

Through this program NOAA will work to:

- Eliminate the burden of redundant or disparate electronic and paper-based requirements for data collections
- Define and implement standard data definitions and standard processes for NOAA data associated with the initiative
- Standardize the collection of data in support of audit and performance-measurement activities.

NOAA Enterprise Architecture

To further the E-Government Strategy, the Administration established the Federal Enterprise Architecture Program Management Office (FEA-PMO). The FEA-PMO has established the following five reference models to transform the federal government into one that is citizen-centered, results-oriented, and market-based:

1. Business Reference Model – identifying services for citizens
2. Performance Reference Model – identifying common performance measurements
3. Service Component Model – identifying capabilities and functionality
4. Technical Reference Model – identifying IT services and standards
5. Data Reference Model – identifying common data definitions.

NOAA is aligning its Enterprise Architecture with the FEA reference model. Together these reference models will serve as a unifying set of standards for achieving consistent progress by using technology to improve performance.

Consistent with the Clinger-Cohen Act and the Government Performance and Results Act, NOAA is striving to improve its IT management processes and to measure progress. The Department of Commerce has developed an IT architecture Capability Maturity Model (CMM) to aid in conducting assessments of each organizational architecture and its progress. The goal is to increase the overall probability of success of the IT Architecture. Based on this process NOAA has identified two focus areas: Architecture Process and Architecture Development. Performance measures for this effort correlate with the CMM. The CMM focuses on nine characteristics of the organization:

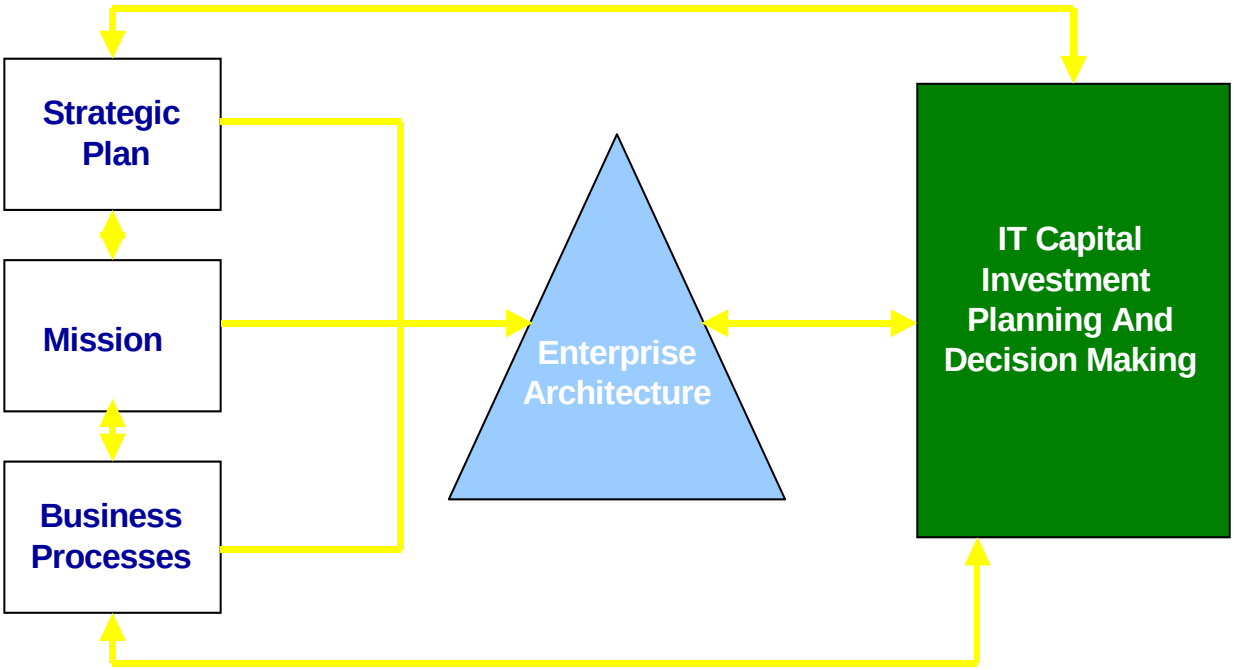
1. Architecture process
2. Architecture development
3. Business linkage
4. Senior management involvement
5. Operating Unit Participation
6. Architecture Communication
7. IT Security
8. Governance
9. IT Investment and Acquisition

To facilitate the NOAA Architecture process the CIO is directing the acquisition and implementation of Enterprise Architecture Modeling software. This software will directly link to database repositories to effectively capture, track, and assist in management of NOAA's IT infrastructure throughout its life cycle. The software will model not just IT processes and infrastructure but the entire Enterprise Business Architecture, a structure in which IT is an enabler, not an end. The software allows NOAA's Enterprise Architecture to be viewed through many "windows" – strategic plan, mission, business processes, capital IT investment planning, decision making – while showing the links and relationships between and among any of these components. As a result of developing this comprehensive Enterprise Architecture model, NOAA will be able to systematically migrate networks and network management facilities, while eliminating single points of failure and reducing costs.

The areas of emphasis of the Enterprise Architecture Initiative will be the six NOAA Cross-Cutting Priorities:

- Integrated Global Environmental Observation and Data Management System (being led by NOAA's NESDIS organization)
- Environmental Literacy, Outreach and Education
- Sound Reliable State of the Art Research
- Homeland Security
- Internal Operations and Infrastructure to support Organizational Excellence.
- International Cooperation and Collaboration

Efforts are already underway in developing an Observing Systems Architecture, NWS Network Consolidation, and a Federated NOAA IT Architecture.


Strategic Plan
Mission
Business Processes
Enterprise Architecture
IT Capital Investment Planning And Decision Making